

Exercise 9: Using the Sky (the planetarium software)

The Sky is a software package published by Software Bisque. It, along with CCD Soft, will be used to guide our telescope remotely (we'll use the Telescope → Link → Establish command. This lab is designed to help you understand how the software works and what its capabilities are.

Obtain a laptop computer from the cart (remember to leave the AC adapter in the cart), turn on the computer and, once the Windows desktop is displayed, click on "the Sky" icon along the bottom row or else the Start button → Programs → The Sky Astronomy Software.

Once The Sky is open, go to Data → Site Information and click on the Location tab. Change the location to Seattle, Washington (you can choose this from the predefined site list) and click Apply. The pattern of stars in the sky should change. Next click on the Date and Time tab, uncheck the Computer Time box and set the time for 9 p.m. tonight (21 hours 0 minutes 0 seconds). Click Apply and the background sky should change significantly. Click Close.

On the display of the night sky, note that you can see the horizon and the cardinal (compass) directions. On the 2nd row of icons, the 4th icon from the left is "Horizon Grid"; click it and see the red grid lines of alt/azimuth.

A nifty feature of The Sky is, unlike me, its encyclopedic knowledge of the stars and planets and other astronomical objects. For instance, looking towards the south, click on the **big, bright star toward the lower right corner of the display**. A window titled "Object Information" should pop up. One other thing that you can do is display labels for objects: Go to View → Labels → Setup and click the Common Names tab. Make sure there is check mark next to "Stars", "Non-stellar", "Constellations", "Messier", "Sun, Planets, Moons" and "Comets". Hit Apply if needed. Then click on the 2nd row of icons, 5th icon from the left to show the lines of the constellations and click on the 2nd row of icons, 8th icon from the left to show the labels.

1. What is the object's common **name**? What is its constellation-based name?
2. What is its **magnitude** (a measure of its apparent brightness)? Hint: scroll down.
3. Click on some nearby (dimmer) stars and check their magnitudes. Write a general qualitative rule about object **magnitude**. In other words, start off with "The larger (more positive) the magnitude is..."

Go back to the original object (the bright star) we had selected.

4. What compass direction corresponds to the object's **azimuth**? Hint: look at the horizon.

5. a. What is the **right ascension** (RA) and **declination** (dec) of this object? Please pay attention to the **units** and **signs** of these coordinates! Note that they are not the same as the alt/azimuth.

b. Turn off “Horizon Grid” and turn on “Equatorial Grid” (2nd row, 3rd icon). What is another name for the 0° declination line?

6. Are there any planets visible in the southern sky tonight at 9 p.m.? You know along what imaginary line they should be located! Fill in the information below:

Planet name	Altitude	Azimuth	Magnitude	In which constellation?

7. Given that objects must be higher than 10° altitude (so that they are above obstructions on the horizon, the haze and light pollution), and given that objects must be brighter than 5th magnitude (to be seen in even a dark Seattle sky), which planets will actually be visible?

You can locate objects using Edit → Find. Type in “moon” in the Find field and hit the “Center and Frame” button.

8. What **phase** is the moon? What **percentage** of the moon’s face is lit?

The problem with “Center and Find” is that the field of view shrinks to a few arc-minutes or seconds. Click the Expand Field of View command (the icon of a magnifying glass with a minus sign – 1st row, 14th icon) until the horizon is visible.

9. Is the moon visible at 9 p.m. tonight from Seattle?

10. Another neat feature about the Sky is its library of Hubble and other large telescope astrophotographs. Some of the non-stellar objects will display a photo as well as an Object Information box. Find one such object; give its name, its RA and dec (units!), its magnitude and what type of object it is (e.g., galaxy, nebula, etc.)